

**IN THE UNITED STATES DISTRICT COURT  
FOR THE EASTERN DISTRICT OF TEXAS  
MARSHALL DIVISION**

<b>FRACTUS, S.A.,</b>	§	
	§	
	§	<b>Civil Action No. 2:22-cv-00412-JRG</b>
<b>v.</b>	§	<b>(Lead Case)</b>
	§	
<b>ADT LLC d/b/a ADT SECURITY</b>	§	Jury Trial Requested
<b>SERVICES</b>	§	

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<b>FRACTUS, S.A.,</b>	§	
	§	
	§	<b>Civil Action No. 2:22-cv-00413-JRG</b>
<b>v.</b>	§	<b>(Member Case)</b>
	§	
<b>VIVINT, INC.</b>	§	Jury Trial Requested
	§	

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**FRACTUS'S CLAIM CONSTRUCTION REPLY BRIEF**

**Table of Contents**

I.	DISPUTED TERMS FOR CONSTRUCTION .....	1
A.	Device terms .....	1
B.	“common conductor” .....	2
C.	“perimeter” .....	2
II.	TERMS CONTENTED TO BE INDEFINITE .....	4
A.	“not similar/in shape/in size” .....	4
B.	“close proximity region” terms .....	5
C.	“hole(s) intersects the (external) perimeter” .....	6
D.	“4G communication standard / communication standard(s)” and “receive signals from a 4G communication standard” .....	7
E.	“complexity factor” .....	9

# **TABLE OF AUTHORITIES**

	<b>Page(s)</b>
<b>Cases</b>	
<i>Allergan Sales, LLC v. Lupin Ltd.</i> , No. 2:11-cv-530-JRG, 2013 WL 4519609 (E.D. Tex. Aug. 21, 2013) .....	6
<i>Gree, Inc. v. Supercell Oy</i> , No. 2:19-CV-00070, 2020 WL 2332144 (E.D. Tex. May 11, 2020) .....	4
<i>Icon Health &amp; Fitness, Inc. v. Polar Electro Oy</i> , 656 F. App'x 1008 (Fed. Cir. 2016) .....	8
<i>Luminati Networks Ltd. v. BIScience Inc.</i> , No. 2:18-CV-00483-JRG, 2019 WL 6683268 (E.D. Tex. Dec. 6, 2019) .....	4
<i>Luminati Networks Ltd. v. UAB Tesonet</i> , No. 2:18-CV-299-JRG, 2019 WL 3943459 (E.D. Tex. Aug. 20, 2019) .....	4
<i>Nautilus, Inc. v. Biosig Instruments, Inc.</i> , 572 U.S. 898 (2014) .....	4
<i>Sonix Tech. Co. v. Publ'ns Int'l, Ltd.</i> , 844 F.3d 1370 (Fed. Cir. 2017) .....	4
<i>SuperGuide Corp. v. DirecTV Enterprises, Inc.</i> , 358 F.3d 870 (Fed. Cir. 2004) .....	7
<i>United Access Techs., LLC v. AT&amp;T Corp.</i> , 757 F. App'x 960 (Fed. Cir. 2019) .....	7
<i>Vitronics Corp. v. Conceptronic, Inc.</i> , 90 F.3d 1576 (Fed. Cir. 1996) .....	4

**I. DISPUTED TERMS FOR CONSTRUCTION**

**A. Device terms**

The dispute for these terms is simple: should the Court conclude that Fractus’s plain and ordinary meaning, supported by the patents and its expert, is correct or should it import Defendants’ additional unsupported restriction that the device operates without wires? Defendants’ definition requires that wireless devices *must* operate without a wire. That is incorrect.

The only “support” Defendants offer for this restriction is that the patents describe devices and antenna designs, and because antennas facilitate wireless communications, a wireless device must be more than one that communicates wirelessly. Dkt. 82 at 3-4. That antennas facilitate wireless communications does not mean that antennas and wireless devices are the same thing.

Defendants do not address Fractus’s evidence. They have nothing to say about the patents’ identification of, for example, wireless access points (which operate while connected to a wire) as wireless devices. Dkt. 75 at 4. Nor do they address that the patents recite that “wireless” relates to connectivity. *Id.* And like practically every other term, they have nothing to counter Dr. Long’s assertion that a POSITA would understand that wireless devices can still operate while connected to cables. *Id.* at 3. Defendants’ proposed construction would exclude preferred embodiments. For “mobile communication device,” Defendants claim that Fractus raised no arguments as to that term, Dkt. 82 at 5, but that is incorrect. The issue is the same and for the same reasons, Dkt. 75 at 3-4, a mobile device does not require a wire to operate. As Dr. Long explained, this term relates to a device that uses mobile communication technology to communicate, not that the device operates with Defendants’ restriction. Dkt. 75-5. Nor does the “portable” in “portable wireless device” mean the device must operate without wires—it is how the device communicates that informs the meaning of wireless. Portable is an easily understood term requiring no construction.

B. “common conductor”

As Fractus already described, Defendants’ proposed definition confuses the reader by describing the “common conductor” as a “contiguous conductive element” without ever answering “contiguous to or with what?” Dkt. 75 at 5. Defendants provide no answer. The confusion prompted by the inclusion of “contiguous” is enough to reject Defendants’ proposed definition.

Defendants also failed to respond to the argument that both the intrinsic evidence and Dr. Long’s declaration flatly rule out their proposed definition’s description of the common conductor as “having” “radiating arm[s].” *See* Dkt. 75 at 6-7. Indeed, all the Figures cited in Defendants’ brief clearly show that the common conductor is a separate and distinct element from the radiating arms (and thus support Fractus’s argument). *See* Dkt. 82 at 7 (common conductors in yellow never overlapping with radiating arms).

Defendants spend the remainder of their briefing shadowboxing against the claim that “the intrinsic record does not permit a POSITA to arbitrarily select any portion of the radiating structure as the ‘common conductor.’” *Id.* at 8. No party has ever argued that point. Instead, Dr. Long has been clear that the common conductor is “coupled to the feeding point” and “carries current to multiple portions (or arms or branches) of the radiator.” Dkt. 75-1 at ¶ 41. As Dr. Long’s declaration confirms, this term does not need special construction. If it is to be given any definition, Defendants’ definition is clearly inadequate and Dr. Long’s should be adopted in its stead.<sup>1</sup>

C. “perimeter”

Defendants take the remarkable position that Fractus’s proposed construction of plain and ordinary meaning causes indefiniteness—particularly odd as they themselves do not contend this

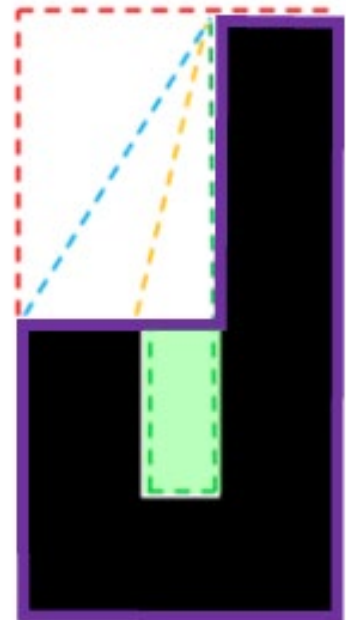
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<sup>1</sup> Defendants’ assertion that the term is both “not well-known in the art and has no plain and ordinary meaning,” are contradicted by the only evidence on the question: Dr. Long’s declaration. *See* Dkt. 75 Ex. 1 at ¶ 41.

term is indefinite. Dkt. 82 at 10. Nor is it. Fractus's plain and ordinary meaning is entirely consistent with the patents and what Dr. Long has testified to. Indeed, it is also consistent with one of the definitions from Defendants' dictionary: the boundary of an area or object. *Id.* at 9.

Defendants offer no intrinsic evidence to support their proposed construction. That is because they cannot dispute that the '092 Patent specifically identifies a scenario, Case 13 of Figure 3, that shows that the perimeter need not be the boundary of a *closed* figure. Dkt. 75 at 12.

Instead, they attempt to sow confusion by creating hypothetical letter shaped objects and argue that there are myriad ways to draw perimeters. But there are not, because they fail to address the additional requirement from the '092 Patent that relates to holes, radiating elements and an *external* perimeter. As Dr. Long explained: "I think we have to look at things in terms of the context of the patent when we're talking about looking at a hole intersecting the perimeter; then we have to look into that as the external perimeter. If we're talking about -- perhaps in a different patent or some other place, we're talking about a perimeter. Then the perimeter would be the complete boundary of that -- of that structure." Dkt. 75-10 at 51:25-52:7. And he explained how to define holes intersecting with an external perimeter: extending "the clear external perimeter of the circular radiating element to -- to completion -- to complete enclosing the radiating element." *Id.* at 45:24-46:4. Thus the external perimeter is defined to make the hole with the minimum area. And so, using Defendants' Example C, there is only one external perimeter and one way to draw the hole, as seen here (perimeter in purple, hole in green).



The plain and ordinary meaning of the term objectively and consistently provides sufficient understanding for a POSITA—and Defendants have no POSITA who contradicts that point.

## II. TERMS CONTENDED TO BE INDEFINITE<sup>2</sup>

“Indefiniteness must be proven by clear and convincing evidence.” *Sonix Tech. Co. v. Publ’ns Int’l, Ltd.*, 844 F.3d 1370, 1377 (Fed. Cir. 2017). Defendants do not carry their burden for any term. Additionally, Defendants claim that the standard for indefiniteness is whether there is “enough certainty,” Dkt. 82 at 11, however the correct (and lower) standard is “reasonable certainty.” *See Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014). And while Defendants cite two cases for the proposition that expert testimony is not necessary, Dkt. 82 at 11, in *Gree, Inc. v. Supercell Oy*, No. 2:19-CV-00070, 2020 WL 2332144, at \*34 (E.D. Tex. May 11, 2020), the court concluded Defendants failed to prove indefiniteness and in *Luminati Networks Ltd. v. BIScience Inc.*, No. 2:18-CV-00483-JRG, 2019 WL 6683268, at \*10 (E.D. Tex. Dec. 6, 2019), the court adopted the reasoning and ruling from an earlier claim construction where the defendant *had* provided expert testimony. *See Luminati Networks Ltd. v. UAB Tesonet*, No. 2:18-CV-299-JRG, 2019 WL 3943459, at \*31 (E.D. Tex. Aug. 20, 2019). Neither case overcomes Defendants failure to provide expert testimony on indefiniteness.

### A. “not similar/in shape/in size”

The majority of Defendants’ argument that these terms are indefinite rests on quibbles with snippets taken from the deposition of Dr. Long. Dkt. 82 at 11-13. This, of course, ignores the substantial evidence from *the patents themselves* that demonstrate what it means for a radiating element or a hole to be not similar in size or shape. Dkt. 75 at 11-12. “[I]ntrinsic evidence is the most significant source of the legally operative meaning of disputed claim language,” *Vitronics*

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<sup>2</sup> The parties now agree on Fractus’s alternative construction for “grid dimension curve.”

*Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1582 (Fed. Cir. 1996), and Defendants have no response to the evidence provided by Fractus.

But they are also incorrect about what Dr. Long’s testimony means. On “not similar in shape,” he did not offer three different definitions. Instead, he explained that “two shapes are similar, first of all geometrically if they have the same number of sides, and they have the same -- same angles.” Dkt. 75-10 at 36:23-25. That is both objective and straightforward. Only when pressed on how he would determine whether two ellipses were similar did he add in the explanation of axis ratios—an explanation which also provides an objective way to determine similarity.

Regarding Dr. Long’s testimony on “not similar in size,” he was never actually unable to determine whether two holes were different in size—because he was not presented with any two holes to compare. He simply stated that he did not need a particular percentage amount to determine whether the sizes of holes were similar or not. Dkt. 75-10 at 29:4-12. But given the examples provided in the patent in Figure 1, a POSITA when faced with actual holes in actual antennas could tell if they were similar in size or not, if for no other reason than that similarly sized holes would impact electromagnetic performance in a different way than not similarly sized holes.

B. “close proximity region” terms

Defendants argue this term is indefinite because they claim there are no “objective” boundaries to the region and because Fractus supposedly does not explain how coupling through a region occurs. Dkt. 82 at 17. They are incorrect.

For starters, Defendants claim that the drawings from the specification that identify close proximity regions somehow confuse, rather than clarify, what constitutes such a region. Dkt 82 at 15. But Defendants ask too much from illustrative drawings which are meant to demonstrate what is meant by a close proximity region and what is not. And Dr. Long explained how he would



determine the bounds of the region and how coupling is enabled: “It needs to be one so that the energy or signal is transferred couple [sic], as they say, between the two portions of each of the parts of the radiating structure.” Dkt. 75-10 at 54:7-9. And he also explained that in the context of the patents, the coupling was sufficient to form such a region when it was “enough to affect these radiation properties of the – of the antenna.” *Id.* at 55:12-14. In other words, a POSITA could determine objective boundaries for the region. And while Defendants might not agree with Dr. Long’s understanding, they failed to offer any countervailing expert testimony and so fail to carry their burden to prove indefiniteness. *Allergan Sales, LLC v. Lupin Ltd.*, No. 2:11-cv-530-JRG, 2013 WL 4519609, \*9 (E.D. Tex. Aug. 21, 2013) (Gilstrap, J.).

Finally, Defendants imply that when illustrative figures in a patent do not repeat every single feature of the invention, that means such a feature is lacking. Dkt. 82 at 17. But every figure need not explain every example of an invention. And Dr. Long again provided the sort of “metes and bounds” Defendants claim are lacking for how he would determine the region in a complicated shape such as the ones Defendants point to: “Sort of two options. You could build the structure and actually make measurements; or many cases now people call it simulating. We do a computer analysis where the electromagnetic fields then can be assimilated or calculated from the -- from the -- this structure. In either case, then you’ll be able to see for a particular -- for a particular regions or coupling this energy from one element to the other.” Dkt. 75-10 at 56:24-57:6.<sup>3</sup>

C. “hole(s) intersects the (external) perimeter”

Defendants simply repeat their erroneous arguments about what constitutes a perimeter and add in that they cannot determine what a “hole” is. Taking the latter first, Defendants presumably have no issue with the concept of a hole as a missing piece of the radiating element that is

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<sup>3</sup> While Dr. Long addressed Figure 8, not Figure 10, the antennas are of equal complexity / variety.

completely encircled by the radiating element. And if they do, the patent provides numerous examples in Figures 1 through 10. What Defendants really seem to object to is the concept of a hole that is not completely surrounded by radiating material—but the patents teach that case in Case 13 of Figure 3 and supporting text. Dr. Long explained why there are holes: “In the context of a patent, the holes are there to perform a foundation, to make the antenna become multiband; or I think make it be smaller in size. So, it’s clear to me in the examples, the real examples of antennas, how these holes can make that effect.” Dkt. 75-10 at 48:9-13. In other words, where there are holes, they are deliberately placed and thus discernable for another reason: they affect the performance and/or the size of the antenna. But perimeter cannot only mean a continuous line of a closed geometric figure, as Defendants propose, because that would mean there can never be a hole and thus no intersection, which is not what the ’092 Patent teaches. *See* Dkt. 75 at 8.

D. “4G communication standard / communication standard(s)” and “receive signals from a 4G communication standard”

Beginning with “4G communications standard,” the Federal Circuit is clear that claim terms can include “after-arising” technology. *See, e.g., SuperGuide Corp. v. DirecTV Enterprises, Inc.*, 358 F.3d 870, 876–78 (Fed. Cir. 2004) (“regularly received television signal[s]” could include digital and analog signals even though televisions capable of receiving digital signals did not exist at the time of the effective filing date). Similarly, the Federal Circuit does not require that a term referring to frequency bands define precisely the bands in question. *See United Access Techs., LLC v. AT&T Corp.*, 757 F. App’x 960, 970–71 (Fed. Cir. 2019) (“high frequency” not indefinite where “upper limit” lacked definition as purpose of term was “simply to distinguish between frequencies . . .”). As Dr. Long’s unchallenged deposition testimony demonstrates, a POSITA for these patents would not need familiarity with the precise contours of communication standards to determine infringement. *See* Dkt. 75-10 at 16:20-18:13. A POSITA will only need to consult the frequency

bands which the device operates in—frequency bands which the specification and industry publications cited in Fractus’s opening brief set out. Dkt. 75 at 19-20.

Even if Defendants were correct that 4G standards had not been *finalized* as of the effective filing date of the patents, that is a far cry from saying that they were not in *existence*. *See* Dkt. 82 at 20. Defendants cite “4G” requirements published by a number of different bodies after 2006, *see* Dkt. 82 at 20, but they do not cite any evidence suggesting “4G” was contentless as of 2006, particularly when read in light of the specification. As Fractus’s opening brief shows, POSITAs were fully informed regarding technical requirements an antenna operating in 4G would likely need to possess as of the patents’ filing date in 2006. *See* Dkt. 75 at 20–21. That the standard underwent further elaboration and codification does not mean that the term was indefinite. *See* Dkt. 75 at 18-19. The cases Defendants cite find indefiniteness when a standard did not exist at all *because* a POSITA would have no guidance as to how to apply the standard. But here, industry publications, the specifications, and the claims themselves guide a POSITA in understanding “4G communication standards.” *See* Dkt. 75 at 19-21. Defendants’ reliance on *Icon Health & Fitness, Inc. v. Polar Electro Oy*, 656 F. App’x 1008 (Fed. Cir. 2016) is inapposite because the *Icon* specification provided “no reference . . . to teach a [POSITA] what constitutes an in-band communication versus an out-of-band communication . . . or how the two are different.” *Id.* at 1014. By contrast the specification here provides numerous examples of 4G technologies and frequency bands which a POSITA can consult. *See* Dkt. 75 at 19-20. That certain technical bodies had yet to codify concepts irrelevant to the claims, e.g., interoperability standards between cellular towers, does not show that a POSITA lacked guidance regarding “4G communication standards.”

As to “receive signals from a 4G communication standard,” Defendants’ only argument appears to be that they find it hard to understand how an antenna receives signals from a

“standard.” Dkt. 82 at 23. The Court need not take Defendants’ word for it. Dr. Long’s declaration confirms that a POSITA would understand the phrase to mean that an antenna could “interact[] with a signal [sent by Fourth generation cellular technology] to obtain or receive electromagnetic energy” without further elaboration. Dkt. 75-1 at ¶ 36-37.<sup>4</sup> It is thus not indefinite.

E. “complexity factor”

Defendants challenge to “complexity factor” requires showing that “(1) different known methods exist for calculating [complexity factor], (2) nothing in the record suggests using one method in particular, and (3) application of the different methods result in materially different outcomes . . .” *Ball Metal Beverage Container Corp. v. Crown Packaging Tech., Inc.*, 838 F. App’x 538, 542 (Fed. Cir. 2020); *see* Dkt. 82 at 24. But the patents provide clear guidance regarding measurement methods and Defendants fail to demonstrate material differences in outcomes.

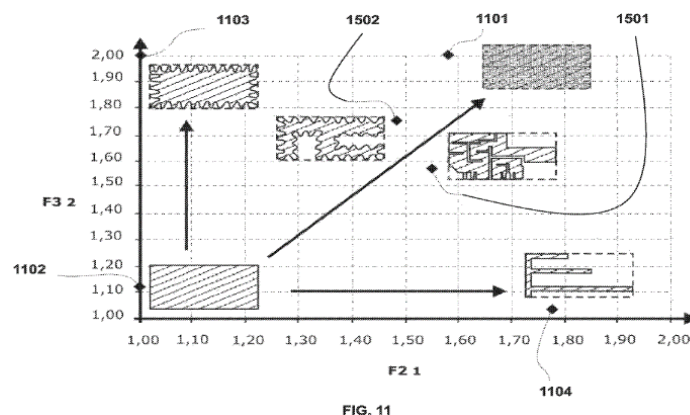
*First*, the ’103 and ’200 Patents provide substantial guidance regarding the selection of methods for the antecedent steps of measuring antenna contours and creating the measurement grids. The claims themselves recite that the “antenna contour” is determined by a “perimeter,” but the patents never describe or refer to the *orthogonal projection* of a perimeter as a “perimeter.” *See* Dkt. 75 at 26; Dkt. 75-3 at 27:9-21; Dkt. 75-11 at 28:9-21 (noting that the “orthogonal projection” may “match[] a segment of the perimeter”). This stands in contrast to other patents in the same family which direct a POSITA to measure the complexity of the “antenna contour” without reference to a “perimeter.” *Compare* Dkt. 75-3 claims 1, 6, 16; Dkt. 75-11 claims 1, 6, 11 *with, e.g.*, Ex. 17 (’727 Patent) at claims 3, 5, 8, 10, 12. The patents thus guide a POSITA regarding the measurement of the antenna contours.

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<sup>4</sup> Defendants argue that since Dr. Long is not a communication standards expert, the Court should ignore his declaration. *See* Dkt. 82 at 19-20. But, as Dr. Long explains, a POSITA for these patents is an expert in *antenna technology*, not communication standards. Dkt. 75 Ex. 1 at ¶ 31-32.

The same is true of the measurement grids used for calculating complexity factors. *See* Dkt. 75 at n.14. The '103 and '200 Patents state that Grid G2 (from which grids G1 and G3 are derived) should have 9 columns and an odd number of between 3-9 rows, *see* Dkt. 82 at 28, and that the resulting grid cells should generally be shaped as square as possible, *id.* at n.8. Defendants claim that because this guidance uses the word “advantageously” and does not specify a particular device size, Dkt. 82 at 29, it must count for nothing. That is incorrect. The specifications give POSITAs guidance on the range of device sizes contemplated by the inventions—essentially from laptop size down to smartphone, *see* Dkt. 75-3 at 2:29-39, Dkt. 75-11 at 2:44-54—state that the proper number of columns in grid G2 is 9, Dkt. 75-3 at 17:36-39, Dkt. 75-11 at 18:8-10, and explain precisely the considerations that go into selection of the ultimate grid cell sizes, *see, e.g.*, Dkt. 75-3 at 17:5-50, Dkt. 75-11 at 17:41-18:16.

Additionally, Figure 11 of both patents supplies a graphical legend mapping antenna shapes against complexity factors for POSITAs to consult to determine if they have properly measured the complexity of the antennas in question. If a low F21 value is calculated, the graph notes that



the antenna should appear essentially rectangular with few complex structures. *See* Dkt. 75-3 at 30:65-31:64; Dkt. 75-11 at 32:1-33:3. If such a value is arrived at from a non-rectangular antenna with complex structures, then Figure 11

guides POSITAs that the measurement and calculation of the factors was not properly performed.

*Second*, Defendants have not provided any expert testimony or other evidence to satisfy their “clear and convincing” burden for demonstrating that the choice of methods results in

materially different infringement outcomes. In lieu of actual evidence, Defendants attach Exhibits I, J, and K purporting to demonstrate that different choices of antenna contour and grid size may result in materially different complexity factors.<sup>5</sup> Attorney argument, however, is “no substitute for evidence” and is insufficient to carry Defendants “clear and convincing” burden. *See, e.g., L.C. Eldridge Sales Co. v. Azen Mfg. Pte. Ltd.*, No. 6:11CV599, 2013 WL 2285749, at \*7 (E.D. Tex. May 23, 2013) (Gilstrap, J.); *Mobile Telecommunications Techs., LLC v. Sprint Nextel Corp.*, No. 2:12-CV-832, 2014 WL 10726788, at \*29 (E.D. Tex. May 2, 2014) (“Defendants [] failed to present any evidence of the understanding of a [POSITA], such as through an expert declaration or [] testimony” and thus failed to show “indefiniteness by clear and convincing evidence”).

To the extent the court considers the additional briefing Defendants inserted in Exhibits I, J, and K, Defendants’ indefiniteness challenge still fails: *none* of the Exhibits demonstrates any material difference in outcome when the teachings of the patent are properly applied to the antennas in question. Starting with Exhibit I, and as set forth in Exhibit TK, Defendants ignored that the claim language of the ’200 Patent directs POSITAs to use an “entire perimeter” rather than “orthogonal projection.” Dkt. 75-11 at claim 1. And Defendants incorrectly performed the orthogonal projection for “Option B”—the only option which Defendants’ claim shows a material difference in complexity factor. Ex. 18 at 1. Defendants’ Exhibit J improperly counts the number of cells in N1 and N2 containing the antenna contour. When the accurate values are used, F21 equals the 1.2 threshold required by the patents. *Id.* at 2-3. As to Exhibit K, Defendants’ grid G2 contains too many columns and does not properly cover the antenna contour—in direct contradiction of the patents’ teachings. *Id.* at 4.

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<sup>5</sup> Defendants’ Exhibits are additional pages of attorney argument and represent attempts to circumvent this Court’s page-limit on briefing, so the Court should discard them for this reason alone. Even if the Court considers these arguments, they fail for the reasons explained above.

Dated: December 28, 2023

Respectfully submitted,

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**CERTIFICATE OF SERVICE**

This is to certify that on December 28, 2023, all counsel of record who are deemed to have consented to electronic service are being served with a copy of this document via the Court's CM/ECF system.

/s/ Craig Smyser

Craig Smyser